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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/918,678	07/30/2001	Gregg Niven	P02877	2176

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EXAMINER	
SANDERS JR, JOHN R	
ART UNIT	PAPER NUMBER
3737	4

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/918,678	Applicant(s) NIVEN ET AL.	
	Examiner John R. Sanders	Art Unit 3737	

-- The MAILING DATE of this communication appears on th cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Paper No. 3, filed 12 May 2003, with respect to the rejections of claims 1-24 under 35 U.S.C. §103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of newly found prior art references.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-4, 6-13 are rejected under 35 U.S.C. §103(a) as being unpatentable over admitted prior art (admission) in view of *Measurement of Radial Keratotomy Clear Zone Diameters*, Journal of Refractive Surgery, 1998, to *Grimmett et al.* (hereinafter *Grimmett*).

4. Admission discloses that "a common measurement for an eye care professional in fitting lenses or performing surgical procedures... or for inserting an inter-corneal lens is to measure the diameter of the cornea or the limbus-to-limbus measurement" and that "the limbal diameter measurement is also used to determine the internal interior chamber diameter or angle-to-angle measurement which is critical for properly fitting an ICL in a patient's eye." (See instant application, paragraph 2).

5. Admission lacks or does not expressly disclose a system for measuring limbus diameter comprising an image recorder, an illumination source, and a computing device for determining the limbus diameter from an image.

6. *Grimmett* is concerned with comparing photographic and slit-beam determinations of clear zone diameters on the eye. *Grimmett* discloses determination of the limbus-to-limbus diameter from both methods (p. 332, last paragraph to p. 333, first paragraph).

7. Regarding claims 1, 7, 8, 10 and 11, *Grimmett* teaches that limbal measurements are currently made using photographic and slit-beam techniques. Applicant's Admission teaches that this measurement is currently common in the art and used in the determination of interior chamber measurements and ICL size determinations. What the art does not expressly teach is a computing device used to measure the limbus diameter and calculate further measurement from the limbus diameter. However, computing means are common in modern ophthalmic devices of all kinds including ones involved in the determination of corneal topography.

8. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize computing means in the determination of the limbal diameter in order to automate the determination process and/or remove possible human error from the measurements.

9. Regarding claims 2, 3 and 4; output displays, fixation target systems, and camera imaging means are all commonly used in ophthalmic trade practice.

10. Regarding claim 6, it is common in ophthalmic testing to use IR measurement light so that the eye remains focused on the visible fixation target.

11. Regarding claim 9, it is common in ophthalmic testing to use laser light of a low wavelength and intensity to avoid unintentional damage to the eye.

12. Regarding claim 12, it is common in ophthalmic testing equipment to have a fixed focus system as such a system has fewer moving parts and it simpler in construction.

13. Regarding claim 13, it is common in ophthalmic photography to have the fundus camera be aligned with the axis of the eye.

14. The above limitations of claims 2-4, 6, 9, 12 and 13 would have been obvious to one of ordinary skill in the art to include in an ophthalmic device.

15. Claim 14 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Grimmett* and Admission in view of *Oltean* '307, of record.

16. *Grimmett* and Admission disclose the above but do not disclose expressly a light filter.

17. *Oltean* discloses a filter (col. 10: 47-56), which is used to remove spurious light from entering the detector. *Oltean*, as discussed by the Examiner in Paper No. 2, is directed to an eye tracking system that detects the limbus by taking advantage of contrast differences between the cornea and sclera.

18. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to employ a light filter to eliminate spurious light and achieve the best contrast in order to detect the limbus boundary, since detection of the boundary is crucial to be able to determine the limbus diameter.

19. Claims 5, 15-21, 23 and 24 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Grimmett* and Admission in view of U.S. Patent No. 5,877,849 to *Ramer et al.*

20. Regarding claims 5, 15-17, 23 and 24, *Grimmett* and Admission disclose the above but do not disclose expressly two illumination sources, switching means, a computer with a frame grabber, the use of triangulation in determining limbus diameter, or disposing the light sources at 25° to 90°.

21. *Ramer* discloses an object detection system that is indicative of the current state-of-the-art in the field of range-finding using triangulation. By using multiple radiation sources spaced apart from each other, the position of an object is determinable by applying trigonometric relationships to the data collected by the detectors (see Summary of Invention). This is a commonly known method of position determination and would have been obvious to one of ordinary skill in the art to apply to ophthalmic position determination. The placement of the radiation sources at angles such as those claimed by Applicant would be obvious as being preferable in order to obtain information from a second radiation source that is a significant departure from information from the first radiation source. This increases the accuracy of the triangulation calculations.

22. *Ramer* does not disclose alternating radiation sources. However, it would have been obvious to one of ordinary skill in the art to only apply one source at a time so that the data received about each source was not interfered with by light from the other source. This is common in instruments designed to determine the topography of the cornea as well as an alternate method of using sources with different wavelengths (the light thereby being separable and classifiable as coming from a specific source).

23. The limitation of a computer with a frame grabber is deemed common as a modern component of digital imaging equipment and techniques and would have been obvious to one of ordinary skill in the art to include in an apparatus designed to image the limbus.

24. Regarding claims 18-21, the limitations of these claims would have been obvious to one of ordinary skill in the art to include in an ophthalmic apparatus, as described above with respect to claims 2, 3, 12 and 13.

25. Claim 22 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Grimmett*, Admission, and *Ramer* in view of *Oltean*.

As applied above, at the time of the invention it would have been obvious to a person of ordinary skill in the art to employ a light filter to eliminate spurious light and achieve the best contrast in order to detect the limbus boundary.

Conclusion

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. *Dublin, Jr.* '110 discloses an apparatus that uses 3D imaging on the eye to determine inter-ocular pressure at the limbus boundary. In the calibration process, the limbal diameter is measured (col. 27: 62 - col. 28: 25). *Uomori et al.* '183 is another example of range finding via triangulation and multiple beam sources.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John R. Sanders whose telephone number is (703) 305-4974. The examiner can normally be reached on M-F 9:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dennis W. Ruhl can be reached on (703) 308-2262. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0858.

jrs

BRIAN L. CASLER
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